

## Factors Affecting Nursing Performance Regarding Hygienic Care in Critically Ill Patients

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### Abstract:

**Background:** Hygienic care is a series of practices performed to preserve health. According to the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases." It is a series of practices performed to preserve health. **Aim** of the study is to assess the factors affecting nursing performance regarding hygienic care. **Research design:** a descriptive exploratory design has been used. **Subjects:** a convenience sample of all available nurses (60) who providing care for patients. **Setting** at the medical and surgical intensive care units at El Demerdash hospital. **Tools of data collection;** four tools were used to collect data: a Nurses structured interviewing questionnaire, hygienic care assessment tool, observational checklist of hygienic care, and factors affecting on hygienic care. **Results:** the results revealed that majority of the studied nurses (85%) had unsatisfactory knowledge scores. Moreover, there was a highly positive association between knowledge of studied nurses and total practice and total hygienic care at (R value.841 &.522) respectively. **Conclusion,** the majority of the studied nurses had unsatisfactory knowledge, and more than half of them had incompetent practice scores about hygienic care in the intensive care unit. **Recommendations:** Promote the hygienic care guidelines as a standard procedure in ICUs.

**key words:** Critically ill patients, Factors, Hygienic Care, Nursing Performance.

### Introduction:

Hygienic care is a series of practices performed to preserve health. According to the World Health Organization (WHO), "Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases." Personal hygiene refers to maintaining the body's cleanliness. Many people equate hygiene with 'cleanliness,' but hygiene is a broad term (Branthover, 2018).

It includes such personal habit choices as how frequently to take a shower or bath, wash hands, trim fingernails, and wash clothes. It also includes attention to keeping surfaces in the home and workplace, including bathroom facilities, clean and pathogen-free. Some regular hygiene practices may be considered good habits by the society, while the neglect of hygiene can be considered disgusting, disrespectful, or threatening (Rosa et al., 2020).

Poor personal hygiene can result in increased risk of infection and illnesses, consequently creating many social problems. Each individual has different hygiene practices. As such, nurses need to identify the hygiene practices of their patients and what sort of assistance needs to be offered, as this will help them to organize patient care appropriately (Papathanassoglou et al., 2018).

Like most cases in hospitals, nurses would have noticed that patients with altered body image and impaired physical condition will have difficulties in performing hygiene practices. The limitations and disabilities that they have restrict them from personally taking charge of proper hygienic care (Ishimaru et al., 2018). Nursing care for critically ill patients includes the implementation of basic care tasks intended to enable patients to perform daily life activities as well as advanced care tasks that support health recovery or the maintenance of

clinical conditions. Nursing care includes, among other elements, providing an atmosphere of comfort and physical and mental ease by promoting factors such as rest, sleep, nutrition, hygiene, and dignity (Zhao et al., 2019).

### **Aim of the study:**

This study aimed to assess the factors affecting nursing performance regarding hygienic care through assessing the nursing knowledge regarding hygienic care, nursing practice regarding hygienic care and assessing the factors affecting hygienic care.

### **RESEARCH QUESTIONS:**

What is nurse's knowledge toward hygienic care among critical ill patients?  
 What is nurse's practice toward hygienic care among critical ill patients?  
 What are the factors affecting hygienic care among critical ill patients?

### **Significance of the study:**

Reported an incidence of HAIs 29.40% in intensive care units (Ahmed & Fayza 2018).

The Recent data from The World Health Organization (WHO) indicate that the prevalence of health care-associated infection varies between 5.7% and 19.1% in low- and middle-income countries. Average prevalence is significantly higher in high- than in low-quality studies (15.5% vs 8.5%, respectively). The proportion of patients with ICU-acquired infection due to poor hygiene ranged from 4.4% to 88.9% with a frequency of overall infections as high as 42.7 episodes per 1000 patient days.

### **subjects and methods:**

#### **Research Design:**

A descriptive exploratory design was used to conduct this study.

#### **Research Settings:**

This study was conducted in the critical care units at El Demerdash hospital.

#### **Subjects:**

A convenience sample of all available nurses who providing care for patient (60) at the medical and surgical intensive care units at el Demerdash hospital

### **Tools of the study:**

#### **Tool I: A Structured Interviewing Questionnaire:**

##### **Part 1:**

Demographic characteristics of nurses such as (age, gender, educational level, years of experience, job title and attended a hygienic care training course) (6) questions.

##### **Part 2:**

Knowledge questionnaire sheet: that developed by the researchers after reviewing the related literature it was adopted from (Heck, 2012) divided into three parts (pre, during and post nursing knowledge regarding hygienic care) (20) questions.

#### **❖ Scoring system:**

The total scores of the 20 questions were 20 degree which equal 100%, each question was assigned a score according to nurses' knowledge responses were correct answer scored with 1 and incorrect answer scored with 0. These scores were summed and were converted into a percent score.

It was classified into 2 categories:

- **Satisfactory** knowledge if total score  $\geq 75\%$ .
- **Unsatisfactory** knowledge if total score  $< 75\%$ .

#### **Tool II: Hygienic Care Assessment:**

This Beck's oral assessment tool was adapted from (Hallberg & Andersson, 2011) and modified by the researchers. It is consists of 2 parts:

**Part I;** this part including data about different mouth areas; tongue, mucous membranes, lips, teeth / dentures and saliva.

**Part II;** this part including conscious level, nutrition and if the patient is immune-compromised.

### ❖ Scoring system:

It seems as a **Likert scale** from 0 to 4, each area was assigned a score according to sub-items as following;

**Tongue;** Pink/ moist Coated Red/edema Blister/ cracks

**Mucous membranes;** Pink and moist Reddened and coated White areas Ulceration & bleeding.

**Lips;** Smooth, pink and moist Dry/ cracked Bleeding Ulceration.

**Teeth/Dentures;** Clean no debris Minimal debris Covered with debris

**Saliva.** Thin, watery plentiful Thick Absent /Dry mouth

**Conscious Level;** Alert/coherent Apathetic Sedated Uncooperative, Unconscious

**Nutrition;** Good Inadequate Fluids only Internal / TPN

**Immunocompro-mised;** No or Yes

These scores were summed up and were converted into a percentage score.

It was classified into 4 categories:

- **No dysfunction** if score 0-5
- **Mild dysfunction** if score 6-10
- **Moderate dysfunction** if score 11-15
- **Sever dysfunction** if score  $\geq 16$

### Tool III: Observational checklist of hygienic care:

It was adopted from literature (**Wilkinson & Van Leuven, 2007**) and modified by the researcher, divided into six parts included preparation of hygienic care (7) items, morning care (6) items, mouth care (6) items, hair shampoo (8) items, perineal care (10) items and bed bathing (28) items and it was answered with done or not done.

### ❖ Scoring system:

The total scores of the statement were 65 degree which equal 100%, each statement was assigned a score according to nurses' responses were done and not done and were scored (1 and 0) respectively. These scores were summed up and were converted into a percentage score.

It was classified into 2 categories:

- **Competent** if total score  $\geq 80\%$ .

- **Incompetent** if total score from  $< 80\%$ .

### Tool IV: Factors affecting on hygienic care:

It is developed by the researcher after reviewing of the literature (**Center of Disease Control 2014**), (**Dorcas, 2010**) and it was divided into three parts; factors related to nurse (13) items, factors related to patient (9) items & factors related to environment (5) items.

### ❖ Scoring System:

If the factor present marked yes and if not marked no, and were scored (1 and 0) respectively.

### Operational Design:

#### Validity:

It was ascertained by a group of experts in medical surgical nursing (7) professors. Their opinions elicited regarding the format, layout, consistency, accuracy and relevancy of the tools.

#### Reliability:

It was analyzed by measuring of internal consistency of the tool through **Cronbach's Alpha test**. Which is a model of internal consistency was used in the analysis of nurses' Interviewing questionnaire was reliable at 0.855, Hygienic care assessment was reliable at 0.901, Observational checklist was reliable at 0.846, and Factors affecting on hygienic care was reliable at 0.924.

#### Pilot Study:

The pilot study was carried out on 10% those represent (6) of nurses in order to test the applicability of the constructed tools and the clarity of the questions. The pilot has also served to estimate the time needed for each subject to fill in the questionnaire. According to the results of the pilot, no corrections and omissions of items were performed, so the nurses were included in the study sample.

#### Fieldwork:

An approval was obtained from the director of previous mentioned setting. A letter was issued to them from the faculty of nursing Ain Shams University, explaining the aim of the study in order to obtain their permission and cooperation. Data were collected through six months, from the beginning of March 2020 to the end of August 2020. The researchers firstly met with the nurses at the previously mentioned settings, explained the purpose of the study after introducing herself. Then, individual interviewing was done after obtaining nurses consent to participate. The researcher was visiting the study setting 2days / week (Sunday and Wednesday) at (9AM -2PM). The questionnaire was filled by nursing staff which take 15-30 minutes, hygienic care assessment was filled by the researcher in 15-30 minutes, the checklist was filled by the researcher in 30-45 minutes and factors affecting on hygienic care was filled within 20-30 minutes. The data collected by using the previously mentioned tools.

### III Administrative Design:

An official permission was obtained by submission of a formal letter issued from the Dean of faculty of nursing, Ain Shams University to the director of El Demerdash hospital/ Ain Shams University. Collect the necessary data for current study after a brief explanation of the purpose of the study and its expected outcomes. Using proper channels of communication from authorized personnel.

### Ethical considerations:

The research approval was obtained from the Faculty Ethical Committee before starting the study.

The ethical research considerations include the following:

- The researcher was clarified the objectives and aim of the study to nurses included in the study before starting.
- Verbal approval was obtained from the nurses before inclusion in the study; a clear and simple explanation was given according to their level of understanding. They secured

that all the gathered data was confidential and used for research purpose only.

- The researcher was assuring maintaining anonymity and confidentiality of subjects' data included in the study.
- The subjects were informed that they are allowed to choose to participate or not in the study and they have the right to withdrawal from the study at any time.

### IV. Statistical Design:

Data collected from the studied sample was revised, coded and entered using Personal Computer (PC). Computerized data entry and statistical analysis were fulfilled using the Statistical Package for Social Sciences (SPSS) version 24. Data were presented using descriptive statistics in the form of frequencies, percentages. Chi-square test ( $X^2$ ) was used for comparisons between qualitative variables. Spearman correlation measures the strength and direction of association between four ranked variables.

### Results:

**Table (1):** presents distribution of the studied nurses' according to their demographic characteristics, it was noticed that three quarters (75.0%) of the studied nurses were female, 36.7% of them aged between 20 to less than 25 years with mean $\pm$  SD 30.6 $\pm$ 4.88. For educational level, more than half (53.4%) of them had technical institute and one third of them had 1 to less than 5 years' experience. Regarding job title, two thirds (66.7%) of them had staff nurse, moreover less than two thirds (61.7%) of them did not attend a hygienic care training course inside ICU.

**Figure (1):** portrays distribution of studied nurses about total knowledge regarding to hygienic care in intensive care unit, It was found that majority of the studied nurses had unsatisfactory knowledge scores, while, only 15.0% of them had satisfactory knowledge scores.

**Figure (2):** reveals distribution of studied patients' about total hygienic care assessment, it was noticed that more than two fifths (42.5%) of the studied patients had moderate dysfunction for total hygienic care, while only (11.3%) of them had no dysfunction for total hygienic care scores.

**Figure (3):** shows distribution of studied nurses' about total practice about hygienic care, it was observed that more than half (55.0%) of the studied nurses had incompetent toward total practice scores, rest of them had competent.

**Table (2):** Table (2) reveals distribution of studied nurses' knowledge regarding to pre, during and post hygienic care, it was observed that highest percentage of the studied nurses had incorrect knowledge all items regarding to hygienic care, while less than half of them had correct knowledge regarding to Step should be done before hygienic care, showed that (70.0% & 75.0%) of the studied nurses had incorrect knowledge regarding to There a sufficient number of nurses compared to number of patients & There a sufficient number of nurses compared to number of patients respectively while (41.7%, 38.3% & 38.3%) of them had correct knowledge regarding to Perform standard precautions with all patients during providing care, The patient left without hygienic care when he refused & There a difference for hygienic care providing to patients on mechanical ventilator respectively.

**Table (3):** presents distribution of studied nurses' about factors related to nurse, (68.3% & 66.7%) respectively of studied nurses reported that factors effect on nurses practice were Unequal nurses patient ratio. & Increase number of staff duties respectively. While less than two thirds of them reported that Nurses have a psychological problem not effect on practices.

**Table (4):** distribution of studied nurses' about factors related to patients, it was observed that (65.0%, 61.7% & 61.7%) respectively of the studied patient reported that factors effect on

their care such as Lack of patient's knowledge, Patient on contact isolation & Lack of cooperation between nurse and patient respectively, while, half of them reported that Malnourished patient not factors related to patient care

**Table (5):** shows distribution of studied nurses' about environmental factors, (65.0% & 63.3%) respectively of the of studied nurses reported environmental factors affect were unavailability of new technology used during hygienic care & improper unit's size and number of patients respectively, while more than two fifths of them reported that lack of supplies and equipment during hygienic care from environment factors.

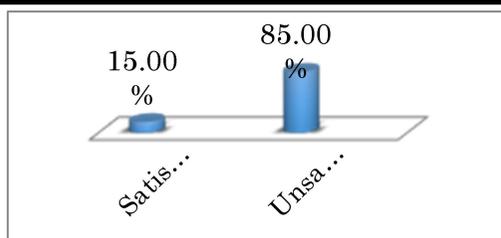
**Table (6):** presents relationship between demographic characteristics of studied nurses and their total knowledge, it was observed that there was a highly statistical significant difference between studied nurses for total knowledge and their educational level, experience years & attendance courses at p value (0.002, 0.000 & 0.009) respectively, moreover there was a statistical significant difference between studied nurses and their age & job title at p value (0.03 & 0.021) respectively. On the other hand there was no statistical significant difference between studied nurses and their gender at p value (.239).

**Table (7):** shows relationship between demographic characteristics of studied nurses and their total practice, it was found that that there was a highly statistical significant difference between studied nurses for total practice and their job title & attendance courses at p value (0.004 & 0.002) respectively, moreover there was a statistical significant difference between studied nurses and their age & experience years at p value (0.038 & 0.040) respectively. On the other hand there was no statistical significant difference between studied nurses and their gender and educational level at p value (.742 & .437) respectively.

**Table (8):** presents Correlation Matrix between Total knowledge, Total practice& Total hygienic care, it indicates that the there was a highly positive association between knowledge of studied nurses and Total practice and Total hygienic care at  $r$  (.841 & .522) respectively at  $p$  value (0.000& 0.002) respectively.

**Table (1):** Distribution of the studied nurses' according to their demographic characteristics (n=60).

Demographic characteristics	N	%
<b>Gender</b>		
Male	15	25.0
Female	45	75.0
<b>Age</b>		
20<25 years	22	36.7
25<30 years	15	25.0
30<35 years	14	23.3
35≥40 years	9	15.0
<b>Mean± SD</b>		<b>30.6±4.88</b>
<b>Educational Level</b>		
Technical institute	32	53.4
Bachelor	18	30.0
Master	8	13.3
Doctorate	2	3.3
<b>Experience years</b>		
1<5 years	20	33.3
5<10 years	7	11.7
10<15 years	19	31.7
More than 15years	14	23.3
<b>Mean± SD</b>		<b>9.56±3.11</b>
<b>Job Title</b>		
Staff Nurse	40	66.7
Charge Nurse	16	26.6
Head Nurse	4	6.7
<b>Attend a hygienic care training course</b>		
Yes	23	38.3
No	37	61.7



**Figure (1):** Percentage distribution of studied nurses' about total knowledge regarding to hygienic care in intensive care unit (n=60).

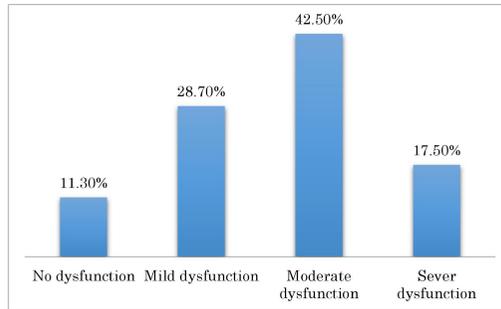


Figure (2): Distribution of the studied patients' according to total hygienic care (N=80).

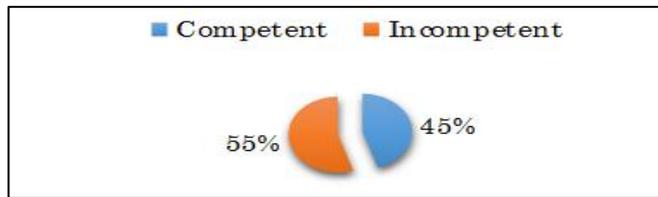


Figure (3): Distribution of the studied nurses' according to their total practice about hygienic care (N=60).

Table (2): Distribution of the studied nurses' according to their knowledge about pre, during and post hygienic care (n=60).

Nursing Knowledge about Pre Hygienic Care	Correct		Incorrect	
	N	%	N	%
Before hygienic care the nurse should be check	19	31.7	41	68.3
Priorities before hygienic care	18	30.0	42	70.0
Step should be done before hygienic care	26	43.3	34	56.7
Factors affect providing hygienic care to the patient	22	36.7	38	63.3
The nurse should be do in case of patient's rejection of care	20	33.3	40	66.7
Assess patient's condition before hygienic care	22	36.7	38	63.3
Have a tool to measure patient need to care	21	35.0	39	65.0
Have a hospital policy regarding hygienic care	19	31.7	41	68.3
<b>Nursing Knowledge about During Hygienic Care</b>				
Perform standard precautions with all patients during providing care	25	41.7	35	58.3
All patients in intensive care need the same hygienic care	18	30.0	42	70.0
There a sufficient number of nurses compared to number of patients	15	25.0	45	75.0
Supervisors following the nurse's performance in intensive care units	19	31.7	41	68.3
There are any obstacles from patients regarding to providing care	20	33.3	40	66.7
There a certain time decided by the hospital to perform a care	21	35.0	39	65.0
<b>Nursing Knowledge about Post Hygienic Care</b>				
There a certain number of times for providing hygienic care to patients	22	36.7	38	63.3
The doctor notified when the patient refused to get a care	20	33.3	40	66.7
The patient left without hygienic care when he refused	23	38.3	37	61.7
It possible for complications to occur while providing a hygienic care to the patients	21	35.0	39	65.0
There a difference for hygienic care providing to patients on mechanical ventilator	23	38.3	37	61.7

**Table (3):** Distribution of studied nurses' about factors related to nurse (n=60).

Nurse Related Factors	Yes		No	
	No	%	No	%
Unequal nurses patient ratio.	41	68.3	19	31.7
Lack of nurse's knowledge and experiences.	37	61.7	23	38.3
Lack of staff training.	34	56.7	26	43.3
Unavailability of tool used to proceed job in a clear sequence.	38	63.3	22	36.7
Lack of adapting to daily work load.	35	58.3	25	41.7
Lack of coordination with the staff.	34	56.7	26	43.3
Lack of supervision.	38	63.3	22	36.7
Lack of cooperation between nurse and patient.	32	53.3	28	46.7
Increase number of staff duties.	40	66.7	20	33.3
Lack of self-confidence.	37	61.7	23	38.3
Work overload.	38	63.3	22	36.7
Difference between educational levels.	36	60.0	24	40.0
Nurses have a psychological problem.	23	38.3	37	61.7

**Table (4):** Distribution of studied nurses' about factors related to patients (n=60).

Patient Related Factors	Yes		No	
	No	%	No	%
Patient with chronic disease.	34	56.7	26	43.3
Immunocompromised patient.	32	53.3	28	46.7
Malnourished patient.	30	50.0	30	50.0
Patient on contact isolation.	37	61.7	23	38.3
Lack of patient's knowledge.	39	65.0	21	35.0
Lack of cooperation between nurse and patient.	37	61.7	23	38.3
Lack of awareness regarding to importance of hygienic care.	36	60.0	24	40.0
Patient have psychological problems.	34	56.7	26	43.3
Patient have wrong beliefs.	36	60.0	24	40.0

**Table (5):** Distribution of studied nurses' about environmental Factors (n=60).

Environmental related Factors	Yes		No	
	No	%	No	%
Lack of supplies and equipment during hygienic care.	34	56.7	26	43.3
Presence of interruption during hygienic care which is affect concentration like noise.	37	61.7	23	38.3
Improper unit's size and number of patients.	38	63.3	22	36.7
Instability of hospital policy.	35	58.3	25	41.7
Unavailability of new technology used during hygienic care.	39	65.0	21	35.0

**Table (6):** Relationship between demographic characteristics of studied nurses and their total knowledge (n=60).

Items		Total knowledge				X <sup>2</sup>	P-Value
		Satisfactory (n=9)		Unsatisfactory (n=51)			
		N	%	N	%		
Gender	Male	3	33.3	12	23.5	2.954	.239
	Female	6	66.7	39	76.5		
Age	20 < 25	6	66.7	16	31.4	13.62	0.03
	25 < 30	1	11.1	14	27.4		
	30 < 35	1	11.1	13	24.5		
	35 ≥ 40	1	11.1	8	15.7		
	Technical institute	0	0	32	62.7		
Educational level	Bachelor	1	11.1	17	33.3	22.29	0.002
	Master	6	66.7	2	3.9		
	Doctorate	2	22.2	0	0		
Experience years	1 < 5	8	88.9	12	23.5	21.84	0.000
	5 < 10	1	11.1	6	11.8		
	10 < 15	0	0	19	37.2		
	≥ 15	0	0	14	27.5		
Job title	Staff Nurse	1	11.1	39	76.5	14.41	0.021
	Charge Nurse	4	44.4	12	23.5		
	Head Nurse	4	44.4	0	0		
Attendance courses	Yes	9	100	14	27.5	16.73	0.009
	No	0	0	37	72.5		

**Table (7):** Relationship between demographic characteristics of studied nurses and their total practice (n=60).

Items		Total practice				X <sup>2</sup>	P-Value
		Competent (n=27)		Incompetent (n=33)			
		N	%	N	%		
Gender	Male	7	25.9	8	24.2	1.314	.742
	Female	20	74.1	25	75.8		
Age	20 < 25	1	3.7	21	63.6	7.995	0.038*
	25 < 30	8	29.6	7	21.2		
	30 < 35	10	37.1	4	12.1		
	35 ≥ 40	8	29.6	1	3.1		
	Technical institute	11	40.7	21	63.6		
Educational level	Bachelor	8	29.6	10	30.3	4.106	.437
	Master	6	22.3	2	6.1		
	Doctorate	2	7.4	0	0		
Experience years	1 < 5	1	3.7	19	57.5	10.25	0.040*
	5 < 10	1	3.7	6	18.2		
	10 < 15	13	48.2	6	18.2		
	≥ 15	12	44.4	2	6.1		
Job title	Staff Nurse	8	29.6	32	96.9	17.197	0.004**
	Charge Nurse	15	55.6	1	3.1		
	Head Nurse	4	14.8	0	0		
Attendance courses	Yes	23	85.2	0	0	12.50	.002**
	No	4	14.8	33	100		

**Table (8):** Correlation Matrix between the Studied Variable (n=60).

		Total Knowledge	Total Practice
1-Total knowledge	R		
	P		
2-Total practice	R	0.841	
	P	0.000	
3-Total hygienic care	R	0.522	0.651
	P	0.002	0.001

**Discussion:**

The demographic profile of the studied participants revealed that three quarters of the studied nurses were female, more than one-third of them aged between 20 to less than 25 years with mean± SD 30.6±4.88. Furthermore, more than half of them had technical institute and one third of them had 1 to less than 5 years' experience. Regarding job title, two-thirds of them had staff nurse, moreover less than two thirds of them did not attend a hygienic care training course inside ICU. This results contradictory to **Aboalzim and Kasemy (2016)** in a study entitled "Nurses knowledge, attitude and practice toward mouth hygiene among critical ill patients", carried among 100 nurses working in ICU at Menoufia University Hospital, aimed to assess nurses' knowledge, attitude and practice toward oral care among critical ill patients, which illustrated that the mean age of the study group was 32.10±6.72 and range from 22.42 years, more than three fourths was female, almost half was bedside nurses and about half of them had a diploma education. The men of working experience as nurse 8.13±4.84 and 6.13±3.50 had experience in ICU.

Concerning to the total nurses' knowledge regarding to hygienic care in ICU, it was found from the current study that majority of nurses had unsatisfactory knowledge scores, while only 15.0% of them had satisfactory knowledge scores. These findings opposite to **Arrar and Mohammed (2020)** findings in a quasi-experimental study entitled "Effectiveness of an Educational Program on Nurses' Knowledge and Practices Concerning Nursing Care for Critically-Ill Patients at Critical Care Units in Misan Governorate

Hospitals", carried out in intensive care unit at Shaheed Al -Sadder teaching hospital and Al Zahrawi surgical hospital, on a purposive sample comprised of 60 nurses is divided into two groups equally, study group were exposed to the nursing educational program, and control group, the previously mentioned study revealed that the majority of nurses had moderate level knowledge in pretest towards nursing care for critically- ill patients for both groups (study and control).

Additionally, the current study finding did not go in the same line with **Aboalzim and Kasemy (2016)** study which showed that more than half of nurses had good knowledge and only 16% of the nurses had not any knowledge about oral care. The researcher returns these findings to the difference in the educational level and years of experience between the studies participants.

Opposite findings also were reported by **Lin et al. (2011)** in a descriptive, cross-sectional study entitled "Critical care nurses' knowledge, attitudes and practices of oral care for patients with oral endotracheal intubation: a questionnaire survey, in Taiwan" aimed to investigate intensive care unit nurses' knowledge, attitudes, and practices of oral care for intubated patients together with the associated factors of the same, and found that elevated scores about oral care information were noted. From the researcher point of view the higher scores on oral care knowledge were associated with nurses performing oral care more frequently. As according to **Lin et al. (2011)** the studied nurses learning about oral care from reading related studies and materials of their own may increase the frequency with which they provide oral care to intubated patients. Furthermore **Lin et al. (2011)** showed that nurses who have a lot of resources for

education about mouth care have better information and able to provide mouth hygiene to critical patients regularly.

At the opposite line **Ibrahim et al. (2015)** in their a cross-sectional study, among a total of 154 ICU nurses were randomly selected from seven governmental hospitals in Khartoum state, entitled “Nurses’ knowledge, attitude and practice of oral care for intensive care unit patients”, found that the majority of nurses had high information about mouth hygiene in ICU. The researcher interpreted these contradictory results related to the fact that about two-thirds (64.5%) of the nurses in the comparative study received training in mouth care provision, and (81%) indicated that further training would be beneficial.

As regard the studied patient’s health assessment profile, it revealed that more than two-fifths of the studied patients had moderate dysfunction for total hygienic care, while only 11.3% of them had no dysfunction for total hygienic care scores. **Khasanah et al., (2019)** in a study entitled “The effectiveness of oral care guideline implementation on oral health status in critically ill patients” found that result showed that before application of guideline, most patient participants had a good or acceptable oral health status. Meanwhile, four patients (8.5%) had abundant amounts of confluent plaque. After guideline implementation, the result showed that most patient participants had a good or acceptable oral health status. For the plaque condition none of the patient (0%) had abundant amounts of confluent plaque. **Khasanah et al.** also concluded that the oral nursing care guideline was effectively implemented with high accuracy and could increase patient oral integrity after its implementation.

Regarding factor affecting the hygienic care, the present study showed that two-thirds of studied nurses reported that factors effect on nurses practice were unequal nurses to patient ratio and increase number of staff duties. Lack of patient’s knowledge, patient isolation, and lack of cooperation between nurse and patient were the most frequent reported factors related to the patient. While unavailability of new

technology used during hygienic care, improper unit’s size, and number of patients, lack of supplies and equipment during hygienic care were the most reported environment factors.

Several factors were acknowledged as the barriers in providing oral care by the nurses according to **Bhavika’s et al. (2017)** study as more than half of nurses found that non-cooperation of patient and endotracheal tube displacement were the main problems faced by them. Other factors like lack of knowledge and time constraint were also addressed by few nurses. On the other hand, amongst the complications encountered while performing oral care, bleeding was the most common expressed by more than two-thirds of nurses, followed by extubating, biting and agitation. Looking at the documented oral care practices in the ICU, there was a severe lack of articles focusing on oral hygiene documentation. In a study by **Adib-Hajbaghery et al. (2013)** entitled “Intensive care nurses’ opinions and practice for oral care of mechanically ventilated patients”, oral care was documented only in 20% of cases.

The results of **Agarwal et al. (2017)** in their study entitled “Survey of extent of translation of oral healthcare guidelines for ICU patients into clinical practice by nursing staff” suggested that maximum number of nurses (78%) strongly agrees that oral care is important in seriously ill patients admitted in ICU. Also, there is mixed feeling among respondents regarding importance of oral care only for ventilator ridden patients (20 agree; 20 disagree; and 10 somewhat agree). Most respondents believe there is a need for training ICU staff for oral care especially specialized training. There is no consensus regarding the oral care being provided only after doctor’s insistence (50% agree and 40% disagree). Most agree that dental hygienists may be employed for carrying out oral care; however most disagree with doctors providing oral care themselves. Majority of respondents believe providing oral care to be an unpleasant job.

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Significantly, the current study demonstrated that there was a highly positive correlation between knowledge of studied nurses and their total practice. Contradictory, **Ibrahim et al. (2015)** in a study entitled “Nurses’ knowledge, attitude and practice of oral care for intensive care unit patients”, found that no correlations were found between knowledge and practice. These results related to a lower educational level, no protocol of oral care among nurses in **Ibrahim et al (2015)** current study. On the other hand, **Aboalizm and Kasemy (2016)** in a study entitled “Nurses knowledge, attitude and practice toward mouth hygiene among critical ill patients” showed that the attitude had a positive correlation and was significantly correlated with their knowledge of oral care ( $p = 0.018$ ). However, practice score did not correlate significantly with their knowledge of oral care.

### **Conclusion:**

The current study concluded that the majority of the studied nurses had unsatisfactory knowledge, and more than half had incompetent practice scores about hygienic care in the intensive care unit. Moreover, there was a positive linear correlation between knowledge of studied nurses and their total practice. As regard factors affecting their performance of hygienic care, unequal nurses to patient ratio, many nursing tasks, lack of

patient’s knowledge, lack of cooperation between nurse and patient, unavailability of new technology, and lack of supplies and equipment during hygienic care were the most frequent reported factors.

### **Recommendations:**

**In the light of the research findings, the following recommendations are offered:**

1. Enhance Cooperation between dental hygienists and nurses in providing oral health care for hospitalized patients can improve the health status of these patients in ICU.
2. Promote the hygienic care guidelines as a standard procedure in ICUs.
3. A standardized oral healthcare protocol in ICU should be organized.
4. Oral care guideline educational program should be scheduled regularly for nurses.
5. Patients should receive continuous monitoring for proper hygiene
6. Using a combination of current evidenced-based practices, open communication with the patient to discover their preferences, and frequent monitoring will allow for the best care possible for the patient.
7. Evaluation of nurses’ attitude toward the provision of hygienic care critically ill patients.
8. There is a definitive need for more randomized controlled clinical trials to study the effectiveness of current oral care practices and the development of new effective techniques with the involvement of the nurses in their development to achieve higher levels of clinical application.

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